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ABSTRACT

This review takes a critical approach in summarizing and evaluating the methodology and scope of catalog use studies, with emphasis on the subject approach to card catalog searching. Subject access is defined in this report; however, the process of subject searching, described repeatedly in library literature, has been based upon common sense understanding rather than systematic observation. The findings of catalog use studies are classified into: (1) generalizations on the physical format of the catalog, information found on the cards, catalog searchers' educational level or area of expertise, and reference assistance; (2) generalizations specific to subject searches, user characteristics, and the physical structure of the catalog; and (3) generalizations specific to known-item searches and nonstandard information, failure at the catalog, and author-title information. The major reviews of catalog use studies and their methods are also covered. A bibliography of catalog use studies and a cited author index are provided. (Author/RAA)

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Research Report

on

Analytical Review of Catalog Use Studies

by

Karen Markey

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ABSTRACT

An extensive body of library literature addresses the area of card catalog use. This review takes a critical approach in summarizing and evaluating the methods and scope of catalog use studies. Emphasis is upon the subject approach to card catalog searching. Subject access is defined herein; however, the process of subject searching, described repeatedly in library literature, has been based upon common sense understanding rather than systematic observation.

The findings of catalog use studies are classified into: (1) generalizations on the physical format of the catalog, information found on cards, catalog searchers' educational level or area of expertise, and reference assistance; (2) generalizations specific to subject searches, user characteristics, and the physical structure of the catalog; and (3) generalizations specific to known-item searches and nonstandard information, failure at the catalog, and author-title information. The major reviews of catalog use studies and their methods also are covered.

NOTE ABOUT THE AUTHOR

Karen Markey prepared this report while working as a Research Assistant in OCLC's Research Department during the summer of 1979. She is pursuing a doctorate degree in Information Transfer in the School of Information Studies, Syracuse University. Ms. Markey received her Bachelor of Arts degree from The Johns Hopkins University, and her Master of Library Science degree from Syracuse University.

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I. DESCRIPTIVE REVIEW OF CATALOG USE STUDIES

A. Subject Access Defined

Subject access designates the approaches to subject matter in a library collection. The approaches may be: 1) systematic, as in the classified arrangement of books on a library shelf; 2) topical, as in the subject headings of the card catalog; 3) or "natural" or "free", as in the title words or abstract words (Committee for the Coordination of National Bibliographic Control, 1973, p. 13). The above approaches are contingent upon subject cataloging coupled with the features of the retrieval system available to the searcher trying to find the subject matter in the collection.

It is apparent that the objectives of subject cataloging outlined by Shera and Egan (1956) go hand in hand with the purpose of the retrieval system. Shera and Egan's objectives are:

(1) Access by subject to all relevant material.

(2) Subject access to materials through all suitable principles of subject organization, e.g., matter, process, applications, etc.

(3) References to materials which treat substantially the same subject are brought together, regardless of disparities in terminology, disparities which may have resulted from national differences, differences among groups of subject specialists, and/or from the changing nature of the concepts within the discipline itself.

(4) Affiliations among subject fields, affiliations which may depend upon similarities of matter studied, point of view, or use or application of knowledge.

(5) Entry to any subject field at any level of analysis, from the most general to the most specific.

(6) Entry through any vocabulary common to any considerable group of users, specialized or lay.

(7) Formal description of the subject content of any bibliographic unit in the most precise or specific terms possible, whether the description be in the form of a word or brief phrase, or in the form of a class number or symbol.

(8) Means for the user to make selection from among all items in any particular category, according to any chosen set of criteria such as most thorough, most recent, most elementary, etc.

Frarey (1960, p. 14) summarized the purpose of subject headings and the subject catalog. With the advent of automated search and retrieval, Foskett's overview (1977) of the principal pre- and post-coordinate indexing languages and systems serves as a comprehensive summary of a century of subject access through manual techniques. The recent workshop of the Committee for the Coordination of National Bibliographic Control (1978) defined subject access in the light of technological developments and sought actions and recommendations to the solution of problems in this area.

B. Catalog Use Studies Evaluated

The principal means of subject access to books, the subject catalog, and its attendant controlled vocabulary have been investigated in over one hundred studies, varying in purpose and scope, on catalog use. Some critical remarks about the methodologies of these studies can serve as a caveat to this discussion. Findings about subject searches favor the responses of students, since studies have been conducted primarily in university and college libraries. Students are used in the laboratory studies by Bates (1977), by Tagliacozzo, Semmel, and Kochen (1971), and reported by Swanson (1972). In most field studies, type of catalog, i.e., dictionary or divided, is not mentioned. Only two studies were done in libraries having book or microform catalogs (Sacco, 1973; Scott, 1975). Other investigations may have been done in libraries having alternate forms of catalog but they were not reported in published articles. Table 1, pages 7 through 11, shows the institutional setting in which catalog use studies have been conducted and the methods used for each study. The numbers in the columns across from the study indicate the number of institutions involved in that study. An "X" in a column indicates multiple libraries were involved in that institutional setting. The numbers preceding the study identify the author for reference in Table 2, page 12. Table 2 summarizes the methods used in the catalog use studies, with totals indicating how often a particular method was used.

Except for studies by Tagliacozzo (1970, 1970a-e, 1972), Lipetz (1968, 1970, 1970a, 1972), Highfill (1969), Brooks and Kilgour (1964), Coblenz and Tagliacozzo (1970), Krikelas (1969), Palmer (1970), and E. Brown (1949), representativeness of the population sampled may be questioned in all studies listed in Table 1. Ayres (1968), Wilson and Hsu (1979), Seymour and Schofield (1973), Perrine (1968), Weiss (1978), Lyon (1963), and Kenney (1966) obtained their data from reference inquiries which "happened" to come to the attention of the librarian or attendant catalog assistant. Hitchcock (1959), Spalding (1950), McGeever (1958), Merritt (1951), Rothrock (1954), and Wolfert (1959) examined circulation records. For example, McGeever collected data on subject and known-item searches from call slips colored-coded to indicate references culled from subject or author-title catalogs. On the other hand, conclusions drawn by Merritt depend on the catalog user's ability to discriminate the east, author- title catalog, from the west, subject catalog. However, if one assumes that some searches performed in the author-title catalog may actually be subject searches (Lipetz, 1972), then counts of call slips from divided catalogs indicate where the user copies down bibliographic information and not whether the search is subject or known-item.

Test questionnaires used by Akers (1931), Malcolm (1950), Lee (1952), and Vaughan (1968, 1968a), and the test conditions of the laboratory experiments of the University of Chicago Requirements study, Swanson (1972), Bates (1977, 1977a), and Tagliacozzo, Semmel, and Kochen (1971), may have issued faulty conclusions since the testing environment may not simulate users' motivation and perserverance when involved in their own literature searches.

Procedures for selecting a sample are unreported in studies by Jackson (1958), Amos (1955), Riddle (1952), Irwin (1949), Kerr (1943), Lee (1952), M. Brown (1946), Markley (1950), Thurlow (1951), Maltby (1972, 1972a, 1973), Diener (1970), Miller (1942), Simmons (1974), MacLean (1972), Scott (1975), and Sacco (1973).

Penalosa (1949) concluded that the divided catalog encouraged a greater number of subject approaches but introduced no treatment or control groups into his design in order to observe the effect.

Lipetz (1977) summarized techniques that have been employed to evaluate both library catalogs and catalog use studies, and cautioned readers about the untrustworthiness of many use studies. Maltby (1971) addressed the reliability and validity of methodological procedures, and selection of variables in use studies; nonetheless, sampling techniques used in the U.K. catalog use survey directed by Maltby (1973) may adversely affect the findings. Brittain (1970) covered psychological and environmental variables in studies of information gathering and seeking behaviors which may be applied to catalog use studies. Methods of conducting user studies, treated by Doyle (1975), have also been employed in use studies. Paisley (1968) built a conceptual framework which placed scientist at the center, rather than the formal information system (or library). In much the same way, Dervin (1976) and Zweizig (1976) advocated user-centered as opposed to library-oriented studies. Surveys of library users and nonusers (Hays, Shearer, and Wilson, 1977; Madden, 1979) underlined the differences between these two populations which library-oriented studies are unable to capture.

C. Information Brought To The Catalog

Users bring to the catalog written or memorized information on both bibliographic and physical description of known items. This information varies in degrees of correctness. After a number of trials in the author-title catalog, known-item searches may be delegated to the subject catalog. Subject information has been analyzed as to its degree of match to the catalog's controlled vocabulary in both field studies and laboratory experiments.

Lipetz, Stangl, and Taylor (1969, p. 269) recorded search clues exactly as known to the catalog user during his/her catalog search. A detailed account of the type of match or mismatch for author-title information was given based on the authors' failure analysis. Tagliacozzo, Kochen, and Rosenberg (1970e, p. 95) discussed the position of error in author surnames, and categorized types of errors in names (pp. 98-100). Ayres (1968, p. 270) performed a failure analysis on users' data for author names and title words. Tagliacozzo, Rosenberg, and Kochen (1970) figured the degree of correctness of users' author and title clues, and found that there was little difference in the degree of correctness when users approached the catalog with written or memorized information for these items. Sequence and choice of access approaches, i.e. author, title, or subject, for known-items searches are described in that article (p. 245).

Users recorded the information they brought to the catalog on a questionnaire designed by Blackburn (1968, p. 72). Categorizing users' responses as to the percentage correct, incorrect or unverified, Blackburn found that users brought information on both bibliographic and physical description to the catalog. In experiments which do not simulate catalog searching behavior, the University of Chicago requirements study (Vaughan, 1968, 1968a; Schmierer, 1968; Hinkley, 1968) showed that subjects recalled both bibliographic and nonstandard information of books they had previously seen.

Tagliacozzo and Semmel (1970c) presented data on the number of subject search terms generated by users (p.103), number of passes per query term (p.106), and the persistence of subject searchers at the catalog (p.108). Coblenz and Tagliacozzo (1970) and Day (1968) categorized the degree of match between user-generated search terms and the catalog's controlled vocabulary.

D. The Subject Approach To The Card Catalog Modeled

Tagliacozzo and Semmel (1970c, pp.97-100) described the process of subject searching in three phases, excluding the subject searching process of browsing: 1) the user tries to match term(s) derived from his/her query with one or more subject entries of the catalog; 2) the user scans cards indexed under the matched subject heading to find those relevant to his/her query; and 3) the user selects one or more cards and records these call numbers. It is not clear, however, how the authors conceived their three phases.

Without explaining to his readers his methods for arriving at a descriptive process of subject searching, Simmons (1974, p. 336) states:

> The typical catalogue user approaches the catalogue with some idea of the subject of the book he is looking for. Looking up the subject, he finds a card for the book, reads the call number from the top left corner of the card, and goes to the shelf either to find the item he has in mind or to see what the library has in stock on that subject. In many ways, his behaviour is identical to the department store shopper looking for an item of which he doesn't know the location. The major difference--possibly the only difference--is that the department store posts a directory that facilitates rapid scanning and provides general locations, while the card catalogue requires careful and often prolonged manipulation but provides precise locations.

Based upon their interaction with students involved in comprehensive literature reviews, Morris and Elkins (1978) outlined topic identification and Library of Congress Subject Heading selection in two separate flowcharts, but the authors' intent is primarily pedagogical. Back (1976) derived flowcharts of the subject searcher's process when performing online literature searches. The charts were drawn up after an analysis of verbal protocols, search traces, and post-search debriefing sessions. Back's approach also may serve as a fruitful means for evaluating the features of an automated catalog subject retrieval system.

Swanson (1963, p. 123) sketched the manual subject searching process of browsing to liken it to an automated version of the same process. In contrast, Swanson imagined that requests for bibliographies on a given topic when presented to an automated catalog would be accepted and transformed. If needed, they would be transformed into a list of possible subject headings without regard for any pre-established subject categories, a transaction which is not always possible in present manual subject searching at the card catalog.

Lancaster (1968, p. 181) emphasized the dynamic interaction between the subject searcher and the library's information resources in a description of shelf browsing:

> Having found some promising references, the seeker locates the documents cited and, from the text and bibliographies of these, may be led to other sources or made aware of additional subject labels that might usefully be consulted in the tools with which he began the search. During this whole process, the "information

need" tends to be modified, to a greater or lesser extent, by what is found during the search, and the final set of documents, accepted by the searcher as "useful" in relation to his requirements, may be somewhat different in character from the "kinds" of documents he visualized as useful when the search commenced.

The encounter of librarian and user in the reference interview manifests striking similarities. Underlying Taylor's conscious, formalized, and compromised needs of question formulation (1962, 1968) (see footnote 1) is the process of negotiation. The librarian, with a view towards recasting the question in anticipation of what the files can deliver, i.e., the compromised need (Q4), works with the inquirer back to the formalized need (Q3), possibly even to the conscious need (Q2), and then translates these needs into a useful search strategy, the compromised need (Q4). Francillon (1959) commented that there is a sort of equation by which each question eventually meets the proper answer. But in every case, someone must put in the equivalent sign...but a gap always exists, and the librarian must bridge it, interpreting the question to fit the established organization of knowledge.

Vavrek (1971) concluded through a content analysis of introductory and negotiated reference questions that the process of the reference interface makes the user's inquiry isomorphic with the classification of knowledge in the library. Artandi (1966), Crum (1969), Jahoda (1976), and Katz (1974) ascertained that the purpose of the reference interview is to determine what information the user wants for his particular question or problem, to clarify the question in terms of itself and in terms of translating it into a form acceptable to the library system coding devices. Lynch (1977) voiced concern about the question negotiation process when she stated that reference librarians may persuade the patron to ask for something which is acceptable to the librarian's belief system or knowledge base.

Taylor's levels of question formulation (1962, 1968) serve as a model of question negotiation. Lynch offers variations of Taylor's work based on an analysis of reference inquiries at public libraries. Alternate models drawn up by Crum (1969), Rettig (1978), and McFayden (1975) are constructed in view of their personal observations and Taylor's levels. Cognizant of the methods employed to construct models of the reference interview, one ought to consider

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1. Taylor's four levels of question formulation are:

   Q1 - the visceral need, the actual, but unexpressed need for information...a vague sort of dissatisfaction or a certain incompleteness in his/her picture of the world.

   Q2 - the conscious need, the conscious, within-brain description of the need; the conscious mental description of an ill-defined area of indecision...an ambiguous and rambling statement.

   Q3 - the formalized need, a properly qualified and rational statement of the need.

   Q4 - the compromised need, the question as presented to the information system.

findings in this area when investigating subject searching, not only in view of similarities between the two processes which have been cited but of instances when catalog searching involves reference assistance (Perrine, 1968; Ayres, 1968; Wilson and Hsu, 1979; Seymour and Schofield, 1973; Weiss, 1978; Lyon, 1963; Kenney, 1966).

Miller (1963) presents three different cognitive operations of information-seeking: browsing, hypothesis formation, and hypothesis testing. Specifying the characteristics of information suitable to the operations he has identified, Miller advocates new symbol repertories (p. 2) for these operations rather than transferring indexing schemes devised for manual operations and requirements to automated library technology.

Doyle (1975) calls for changes in information systems which are evolutionary, not revolutionary. Behavioral factors, according to Paisley (1968, p. 24), ought to be incorporated in information system planning to explain why the system is not working very well, and to become the system's foundation.

E. Whither Subject Access

Lipetz, Stangl, and Taylor (1969) have shown the value of word-compression techniques to deal with errors in lengthy author names and title words. Bookstein (1974) combined the benefits of the search key approach with the inverted file approach to increase the efficiency of the search key technique when applied to large data bases.

Imaginative dialogues of the user-system interface are offered by Swanson (1963) and Oddy (1977). O'Connor (1978) concludes from his study of searchers evaluating the appropriateness of subject terms and bibliographic information that an additional subject catalog using subject headings arranged hierarchically is preferred by a large proportion of catalog searchers. Bates' information search tactics (1979) built into an automated subject retrieval system, may aid the user on-line when involved in the search process. Back (1976) demonstrated the utility of a method to discover process which requires the subject to verbalize aloud his/her train of thought.

The findings of Maltby and Duxbury (1972), Malcolm (1950), and MacLean (1972) demonstrated that catalog users seek augmented subject access to monographs. Radford (1968) advocated automated manipulation of words from the titles, subtitles, and tables of contents of books. Hudson (1970) showed that all relevant references on a given topic are retrieved when every field of MARC records which contain English language words and phrases and pertinent LC and/or DC classification ranges are scanned by an automated retrieval system. Atherton (1978a) augmented the MARC record with terms and phrases from the contents pages and indexes of books and made these "enriched" records available for on-line searching; searchable data elements pertaining to books' subjects included classification number, title words, LC subject headings and terms, contents terms, index terms, and combinations of these by virtue of the SDC ORBIT Boolean searching capability.

The recent workshop of the Committee for the Coordination of National Bibliographic Control (1978) generated no suggestions that would have widespread applicability on the problem of subject access to monographs (p. 45). The outcome of the Committee in this area, that something useful should be better than nothing (p. 46), alludes to challenge.

Table 1. Types of Institutions in Which Catalog Use Studies Have Been Conducted

Catalog Use Study	Institutional Setting: High School Library	National Library	Public Library	Special Library	University/Special Library	University/College Library	Methods
1. Akers (1931)						10	Questionnaire, by interviewer, at catalog; test questionnaire.
2. Amos (1955)						1	Questionnaire, by interviewer, by respondent, at catalog.
3. Aubrey (1972)						1	Performance measure, i.e., time spent searching book vs. card catalogs, time spent searching "large" vs. "small" catalog in test file.
4. Ayres (1968)				1			Reference requests related to catalog use collected.
5. Bates (1977)						1	Test questionnaire on catalog familiarity; test questionnaire on subject headings. (lab test)
6. Bates (1977a)						1	Test questionnaire on subject headings. (lab test)
7. Blackburn (1968)						1	Questionnaire by interviewer, by respondent, at catalog; collected user clues.
8. Brooks and Kilgour (1964)					1		Observed catalog traffic; questionnaire, by interviewer, at catalog.
9. Brown, E. (1949)						1	Questionnaire, by interviewer, at catalog, test questionnaire.
10. Cooper (1970)						1	Test questionnaire. (lab test)

Note: Numbers in columns indicate the number of institutions involved in the study.

A question mark (?) following a method indicates an uncertainty about the type of method used in the study.

Table 1. Types of Institutions in Which Catalog Use Studies Have Been Conducted (continued)

Catalog Use Study	Institutional Setting: High School Library	National Library	Public Library	Special Library	University/Special Library	University/College Library	Methods
11. Day (1968)						1	Test questionnaire. (lab test)
12. Diener (1970)					4		Questionnaire, by interviewer, at catalog?
13. Highfill (1969)						1	Questionnaire, by interviewer, at catalog; observed user at catalog; collected user clues.
14. Hitchcock (1959)						1	Collected call slips.
15. Irwin (1949)			4				Questionnaire, by interviewer, at catalog; test questionnaire.
16. Jackson (1958)	6		10	6(1)		17	Questionnaire, by interviewer, at catalog?
17. Kenney (1966)				1			Reference requests related to catalog use collected; personal interviewing of staff, at?
18. Kerr (1943)						9(2)	Questionnaire, mailed.
19. Krikelas (1969)						1	Performance measure, i.e. relevant material culled from dictionary or divided catalogs for subject searches.
20. Lee (1952)						2	Questionnaire, by interviewer, at library? or at?
21. Lipetz (1970a)						1	Observed catalog traffic; questionnaire, by interviewer, at catalog; observed user at catalog; follow-up questionnaire, by interviewer; collected user clues.

Note: (1) May include special libraries and university special libraries.

(2) Sent to college deans, presidents, faculty, and libraries.

Table 1. Types of Institutions in Which Catalog Use Studies Have Been Conducted (continued)

Catalog Use Study	Institutional Setting: High School Library	National Library	Public Library	Special Library	University/Special Library	University/College Library	Methods
22. Lyon (1963)						1	Reference requests related to catalog use collected.
23. MacLean (1972)			X(3)		X	X	Questionnaire, by interviewer, at library.
24. Malcolm (1950)						1	Questionnaire, by respondent, at catalog; test questionnaire.
25. Maltby (1973)		X	X		X	X	Questionnaire, by interviewer, at library.
26. Maltby and Duxbury (1972)			4		1	3	Questionnaire, by respondent, at library?
27. Markley (1950)						1	Questionnaire, by interviewer, at catalog.
28. McGeever (1953)			X				Call slip questionnaire, by respondent, at catalog.
29. Merritt (1951)						1	Data on circulation records collected.
30. Miller (1942)						3	Questionnaire, by interviewer, at catalog.
31. Palmer (1970)						1	Questionnaire, by respondent, at catalog.
32. Penalosa (1949)			1			1	Questionnaire, by interviewer?, at catalog.
33. Perrine (1968)			11			12	Reference requests related to catalog use collected.
34. Petrof (1962)						1	Questionnaire, by respondent, at catalog.

(3) X is defined as one or more libraries.

Table 1. Types of Institutions in Which Catalog Use Studies Have Been Conducted (continued)

Catalog Use Study	Institutional Setting: High School Library	National Library	Public Library	Special Library	University/Special Library	University/College Library	Methods
35. Riddle (1952)						1	Questionnaire, by interviewer, at catalog.
36. Rothrock (1954)						1	Call slip questionnaire, by respondent.
37. Sacco (1973)			1			1	Questionnaire, by interviewer, at catalog; observed user at catalog; collected user clues?; follow-up questionnaire, by interviewer.
38. Schmierer (1968)						1	Test questionnaire. (lab test)
39. Scott (1975)			3				Questionnaire?, by respondent?, at?
40. Seymour and Schofield (1973)					1	3	Collected call slips.
41. Simmons (1974)			1				Questionnaire?, by interviewer?, at catalog?
42. Spalding (1950)		1					Collected call slips.
43. Tagliacozzo, Semmel, and Kochen (1971)						1	Performance measure, i.e., degree of match for subjects' responses to subject headings relevant to book contents. (lab test)
44. Tagliacozzo, Rosenberg, and Kochen (1970)			1		1	2	Questionnaire, by interviewer, at catalog; observed user at catalog; collected user clues; follow-up questionnaire.

Table 1. Types of Institutions in Which Catalog Use Studies Have Been Conducted (continued)

Catalog Use Study	Institutional Setting: High School Library	National Library	Public Library	Special Library	University/Special Library	University/College Library	Methods
45. Thurlow (1951)					2		Questionnaire, by interviewer, at catalog.
46. Vaughan (1968, 1968a)						1	Test questionnaire. (lab test)
47. Weiss (1978)						1	Questionnaire, by respondent, at library; reference requests related to catalog use collected.
48. Williams (1952)			1				Call slip questionnaire, by respondent.
49. Wilson and Hsu (1979)						1	Collected ILL request slips.
50. Wolfert (1959)					1		Collected call slips.
TOTAL	6	2+	40+	8+	13+	90+	(see Table 2.)

Table 2. Methods used and Number of Studies using the Methods

Methods Used	Total Number of Studies	Catalog Use Study (numbers correspond to those given in Table 1)
a) Call slips or circulation records collected	8	14, 28, 29, 36, 40, 42, 48, 50.
b) Collected user clues	5	7, 13, 21, 37, 44.
c) Observed catalog traffic	2	8, 21.
d) Observed user at catalog	4	13, 21, 37, 44.
e) Performance measure	3	3, 19, 43.
f) Questionnaire by interviewer	21	1, 2, 7, 8, 9, 12, 13, 15, 16, 20, 21, 23, 25, 27, 30, 32?, 35, 37, 41?, 44, 45.
g) Questionnaire by interviewer or respondent	27	1, 2, 7, 8, 9, 12, 13, 15, 16, 20, 21, 23, 24, 25, 26, 27, 30, 31, 32?, 34, 35, 37, 39?, 41?, 44, 45, 47.
h) Questionnaire by respondent	8	2, 7, 24, 26, 31, 34, 39?, 47.
i) Questionnaire by interviewer or respondent at catalog	22	1, 2, 7, 8, 9, 12, 13, 15, 16?, 21, 24, 27, 30, 31, 32, 34, 35, 37, 39?, 41?, 44, 45.
j) Questionnaire by interviewer or respondent at library	5	20?, 23, 25, 26, 47.
k) Questionnaire, mailed	1	18.
l) Reference requests collected	5	4, 17, 22, 33, 47.
m) Test questionnaire	10	1, 5, 6, 9, 10, 11, 15, 24, 38, 46.
n) ILL request slips collected	1	49

II. GENERALIZATIONS ABOUT SUBJECT SEARCHING GLEANED FROM CATALOG USE STUDIES

This chapter lists and classifies the generalizations on catalog use and the studies that support and do not support each statement. A total listing of these generalizations provides a skeleton summary of the major findings or primary issues in this area since the methodologies of most catalog use studies may contain errors.

For each generalization, the number and percentage of catalog use studies that support and that do not support are given. The author(s), year of publication, and page number(s) for each study cited also are provided.

Generalizations are classified as follows:

A. General Findings

1. The Physical Format of the Catalog and the Information Found on Cards

2. Card Catalog Searchers' Educational Level or Area of Expertise

3. Reference Assistance

B. Generalizations Specific to Subject Searches

1. Characteristics of Users

2. The Physical Structure of the Card Catalog

3. The Catalog's Controlled Vocabulary

4. Known-item Searches

C. Generalizations Specific to Known-item Searches

1. Nonstandard Information

2. Failure at the Catalog

3. Author-title Information

A. General Findings

1. The Physical Format of the Catalog and the Information Found on Cards

a. Card catalog users employ the following sets of objectives when performing searches of the catalog:

(1) Known-item search (or documents search), i.e, determine whether the library holds a work that is known by the user to exist.

(a) Lipetz (1972, p. 135)
(b) Jackson (1958, pp. 6,9,35)
(c) Irwin (1949, pp. 39-41); Maclean (1972, p. 167); Sacco (1973, p. 262); Palmer (1970, p. 147)
(d) Riddle (1952, p. 30 in Montague); Miller [1942, p. 21 in Palmer (1972)]; Lee (1952, p. 12 in Montague); Simmons (1974, p. 331)
(e) Amos (1955, p. 8 in Montague); Tagliacozzo (1970a; IV/28)

(2) Subject search, i.e., for pertinent works on a topic.

(a) Lipetz (1972, p. 135)
(b) Jackson (1958, pp. 6,9)
(c) Irwin (1949, pp. 39-41); MacLean (1972, p. 167); Sacco (1973, P. 262); Palmer (1970, p.147)
(d) Riddle (1952, p. 30 in Montague); Miller [1942, p. 21 in Palmer (1972)]; Lee (1952, p. 12 in Montague); Simmons (1974, p. 331)
(e) Amos (1955, p. 8 in Montague); Tagliacozzo (1970a, IV/28)

(3) Author search, i.e., determine what works are available from some known author or publishing body.

(a) Lipetz (1972, p. 135)
(b) Jackson (1958, pp. 6,9)

(4) Bibliographic search, i.e., for a known item when the objective is to make use of the data from the catalog and not locate the physical item.

(a) Lipetz (1972, p. 135)
(b) Riddle (1952, p. 30 in Montague); Miller [1942, p. 21 in Palmer (1972)]; Lee (1952, p. 12 in Montague); Simmons (1974, p. 331)
(c) Amos (1955, p. 8 in Montague); Tagliocozzo (1970a, IV/28)

(5) Browsing search, i.e., to locate in the catalog a call number range in the book stacks with items on a particular subject in that range.

(a) Jackson (1958, pp. 34 and 36)
(b) Irwin (1949, pp. 39-41); Maclean (1972, p. 167); Sacco (1973, p. 262); Palmer (1970, p. 147)
(c) Amos (1955, p. 8 in Montague); Tagliacozzo (1970a, IV/28)

b. Users of the card catalog at academic institutions use the card catalog more frequently than users at public libraries. (2 studies, or 67%, support; 1 study does not support).

Supporting: Tagliacozzo (1970b, IV/22); Maclean (1972, p. 167).

Not Supporting: Maltby (1972, p. 192).

c. The primary purpose of users approaching the card catalog is to collect information for a class assignment. (9 studies, or 90%, support; 1 study does not support).

Supporting: Amos (1955, p. 8 in Montague); Brown (1949, p. 14 in Montague); Lee (1952, p. 19 in Montague); Malcolm (1950, p. 107 in Montague); Riddle (1952, p. 107 in Montague); Markley [1950, p. 35 in Palmer (1972)]; Petrof [1962, p. 38 in Palmer (1972)]; Diener (1970, p. 121); Palmer (1970, p. 99).

Not Supporting: Wolfert (1959, p. 59 in Montague)

d. Library users seek recently published material as much as possible. (3 studies, or 75%, support; 1 study does not support).

Supporting: Brooks and Kilgour (1964, p. 487); Williams (1952, p. 55 in Montague); Merritt [1951, p. 36 in Palmer (1972)].

Not Supporting: Palmer (1970, p. 110).

e. Library users prefer material in English. (4 studies, or 100%, support).

Supporting: Brooks and Kilgour (1964, p. 487); Markley [1950, p. 35 in Palmer (1972)]; Merritt [(1951, p. 36 in Palmer (1972)]; Palmer (1970, p. 111).

f. The average amount of time for catalog searches is as follows:

(1) "Yale Study" (1970, p. 3720)
    (a) 2 minutes,
    (b) 5 minutes.

(2) Bryant and Needham (1974, pp. 11-12)
    (a) 2.21 minutes, author search,
    (b) 4.25 minutes, title or class searches.

g. Catalog use traffic and book circulation are proportional. (1 study, or 100%, supports).

Supporting: Lipetz (1972, p. 134).

h. Over half of the library's users do not consult the card catalog. (2 studies, or 50%, support; 2 studies do not support).

Supporting: Maltby and Sweeney (1972a, p. 192) (1); MacLean (1972, p. 168) (2).

Not Supporting: Maltby and Sweeney (1972, p. 192) (3); MacLean (1972, p. 168) (4).

(1) In two of six categories of libraries surveyed: (a) municipal public libraries; (b) county public libraries.

(2) In two of four categories of libraries surveyed: (a) small public libraries; (b) technical institutes.

(3) In four of six categories of libraries surveyed: (a) university libraries; (b) college libraries; (c) national libraries; (d) polytechnic libraries.

(4) In two of four categories of libraries surveyed: (a) large public libraries; (b) university libraries.

i. Reasons for nonuse of the card catalog are as follows:

MacLean (1972, p. 168)

(1) I can manage without it.
(2) I prefer to ask the staff.
(3) It is difficult to understand.
(4) I use the library for study only.
(5) I use the library for reading magazines.
(6) I use reading lists.
(7) I know where the books are.
(8) I don't know what a catalogue is.
(9) I didn't know there was one.
(10) I didn't know the public were permitted to use it.
(11) I can't read the cards.
(12) I didn't know there was one.
(13) I have no time.
(14) I generally reserve new books.
(15) I just enjoy browsing.
(16) It never occurred to me.

Maltby and Sweeney (1972a, p. 193)

(1) Catalog doesn't give information wanted.
(2) I can manage without it.
(3) Prefer to ask staff.
(4) Crowding makes it difficult.
(5) Difficult to understand.

j. When questioned about common abbreviations employed on catalog cards, users' responses show that the following are the best known abbreviations:

Amos (1955, p. 11 in Montague)

(1) editor,
(2) illustrator,
(3) diagrams.

Lee (1952, p. 18 in Montague)

(1) illustrator.

Akers (1931, pp. 404-405)

(1) editor,
(2) illustrator,
(3) edition statements,
(4) illustrations,
(5) volume statements,
(6) photographs.

k. When questioned about the bibliographic information on catalog cards, users' responses show that the best known information is as follows:

Lee (1952, p. 18 in Montague)

(1) author,
(2) title,
(3) call number,
(4) contents notes,
(5) bibliography notes.

Malcolm (1950, p. 25 in Montague)

(1) call number,
(2) author,
(3) title,
(4) subject heading,
(5) date of publication,
(6) imprint.

l. When questioned about nonbibliographic information about books in the area of psychology which is remembered, subjects recall the following information most accurately:

Vaughan (1968a, p. 16)

(1) problems at end of chapter,
(2) number of volumes,
(3) chapters titled,
(4) translation from other language,
(5) figures, charts, graphs, etc.
(6) glossary,
(7) reprint or revision,
(8) published in a series.

m. Sources of information for references to known items are as follows:

Rothrock (1954, p. 109 in Montague)

(1) oral class references,
(2) reading list references,
(3) supplementary reading sources,
(4) miscellaneous references.

Seymour and Schofield (1973, p. 15)

(1) lecturer or supervisor,
(2) reading list,

(3) book/periodical article,
(4) separate bibliography,
(5) colleague/friend,
(6) reviews,
(7) publicity/bookshop.

Blackburn (1968, p. 16)

(1) class reading lists,
(2) bibliography,
    (a) in book
    (b) in article
    (c) separate
(3) footnotes,
    (a) in book
    (b) in article
(4) citations,
    (a) in book
    (b) in article
(5) verbal recommendations,
    (a) in class
    (b) out of class
(6) reference works,
    (a) indexes
    (b) catalogs
    (c) abstracts
    (d) biographies
(7) previous contact with work,
    (a) read
    (b) slight contact
    (c) seen
(8) familiar work in field,
(9) miscellaneous, e.g., files, movie title, etc.

Diener (1970, p. 119)

(1) personal recommendation,
(2) other books and periodicals,
(3) subject bibliographies.

Jackson (1958, p. 26)

(1) reading list,
(2) oral citation,
(3) footnote or bibliography in book,
(4) indexing journal,
(5) abstracting journal,
(6) periodical book review,
(7) advertisement,
(8) booklist.

n. The most frequently used information which users cull from card catalogs is as follows:

Information	Citing Source
Author	Akers (1931, p. 400) Amos (1955, p. 8 in Montague) Highfill (1969, p. 136) Irwin (1949, p. 41 in Montague) Lipetz [1970a, p. 38 in Lancaster (1977)] MacLean (1972, p. 167) Palmer (1970, p. 125) Penalosa (1949, p. 89 in Montague) Riddle (1952, p. 31 in Montague) Sacco (1973, p. 262) Simmons (1974, p. 334)
Bibliography Note	Highfill (1969, p. 136)
Call Number	Amos (1955, p. 8 in Montague) Irwin (1949, p. 41 in Montague) MacLean (1972, p. 167) Palmer (1970, p. 125) Sacco (1973, p. 262) Simmons (1974, p. 334)
Contents Notes	Akers (1931, p. 400) Lipetz [1970a, p. 38 in Lancaster (1977)] Palmer (1970, p. 125) Riddle (1952, p. 31 in Montague)
Cross References	Akers (1931, p. 400)
Date	Akers (1931, p. 400) Highfill (1969, p. 136) Jackson (1958, p. 34) Lipetz [1970a, p. 38 in Lancaster (1977)] MacLean (1972, p. 167) Penalosa (1949, p. 89 in Montague) Williams (1952, p. 55 in Montague)
Editor	Palmer (1970, p. 125)
Language	Jackson (1958, p. 34) Lipetz [1970a, p. 38 in Lancaster (1977)]
Place of Publication	Sacco (1973, p. 262)
Publisher	MacLean (1972, p. 167)
Subject Heading	Akers (1931, p. 400) Highfill (1969, p. 136) Irwin (1949, p. 41 in Montague) Palmer (1970, p. 125) Penalosa (1949, p. 89 in Montague)
Title	Akers (1931, p. 400) Amos (1955, p. 8 in Montague) Highfill (1969, p. 136) Irwin (1949, p. 41 in Montague) Jackson (1958, p. 34) Lipetz [1970a, p. 38 in Lancaster (1977)] MacLean (1972, p. 167) Palmer (1970, p. 125) Penalosa (1949, p. 89 in Montague) Riddle (1952, p. 31 in Montague) Sacco (1973, p. 262) Simmons (1974, p. 334) Williams (1952, p. 55 in Montague)

2. Card Catalog Searchers' Educational Level or Area of Expertise

a. Subjects recalling nonstandard information about books in their area of expertise will perform better than those recalling information not in their area of expertise. (1 study, or 100%, does not support).

Not Supporting: Schmierer (1968, p. 43).

b. Graduate students are more likely to seek foreign language material than undergraduates. (2 studies, or 100%, support).

Supporting: Hitchcock [1959, p. 38 in Palmer (1972)]; Markley [1950, p. 35 in Palmer (1972)].

c. Use of items of bibliographic description increases as the educational level of the catalog user rises. (1 study, or 100%, supports).

Supporting: Palmer (1970, p. 149).

d. Catalog users perform more successful card catalog searches in their primary field than out of their primary field. (1 study, or 100%, does not support).

Not Supporting: Palmer (1970, p. 122).

e. A greater percentage of users consulting the card catalog has had formal catalog instruction. (3 studies, or 75%, support; 1 study does not support).

Supporting: Amos (1955, p. 9 in Montague); Williams (1952, p. 54 in Montague); Maltby (1973, p. 51 in Lancaster).

Not Supporting: MacLean (1972, p. 168) (1).

(1) In all four categories of libraries surveyed: (a) large public libraries; (b) small public libraries; (c) university libraries; (d) technical institutes.

f. The card catalog is self-selective; the type of users of card catalogs (in public libraries) bears little relation to the characteristics of the community in which the library is located. (1 study, or 100%, supports).

Supporting: Irwin (1949, p. 41 in Montague).

g. Students in various curriculum divisions do not vary in their knowledge of the catalog. (1 study, or 100%, supports).

Supporting: Amos (1955, p. 11 in Montague).

h. Students in various curriculum divisions do not vary in their use of the catalog. (1 study, or 100%, supports).

Supporting: Amos (1955, p. 11 in Montague).

3. Reference Assistance

a. Catalog users seek reference assistance during their catalog searches. (8 studies, or 100%, support).

Supporting: Ayres (1968, p. 268); Blackburn (1968, p. 18); Kenney (1966, p. 197); Lyon (1963, pp. 21-22); Jackson (1958, p. 29); Sacco (1973, p. 263) (1); Weiss (1978, p. 112); Seymour and Schofield (1973, p. 9).

(1) In two of two libraries surveyed: (a) Forest Park Community College, St. Louis; (b) District Center Library, West Chester, PA.

b. Library staff use of the card catalog can be chiefly described as readers' advisory work, i.e., general help to readers. (1 study, or 100%, supports).

Supporting: Scott (1975, p. 93).

B. Generalizations Specific To Subject Searches

1. The Characteristics of Users

a. The location of a particular form of material, e.g., periodicals on antiques, textbooks on education, constitutes a definable group of subject searches. (1 study, or 100%, supports).

Supporting: Brooks and Kilgour (1964, p. 487).

b. Graduate students are more likely to succeed performing subject searches than are undergraduates. (1 study, or 100%, does not support).

Not Supporting: Knapp [1943, p. 34 in Palmer (1972)].

c. Over 50% of subject catalog searchers continue their search after failing to find a single reference at the initial attempt. (1 study, or 100%, supports).

Supporting: Tagliacozzo (1970a, p.108) (1).

(1) In three of three libraries surveyed: (a) University of Michigan, General Library; (b) University of Michigan, Undergraduate Library; (c) University of Michigan, Medical Library.

d. Users who are looking for information on a particular subject consult only the subject portion of the catalog. (6 studies, or 100%, do not support).

Not Supporting: Brown (1949, p. 14 in Montague); Brooks and Kilgour (1964, p. 486); Lipetz (1972, p. 135); Irwin (1949, p. 102 in Montague); Sacco (1973, p. 262); Jackson (1958, p. 13).

e. Items chosen in subject searches at the card catalog are more likely than items not selected to contain information about bibliography or contents notes on the catalog card. (1 study, or 100%, supports).

Supporting: Highfill (1969, p. 219).

2. The Physical Structure of the Card Catalog

a. Both known-item and subject searches result in fewer user failures in libraries having divided catalogs. (1 study, or 100%, supports).

Supporting: Jackson (1958, p. 19).

b. College undergraduates find subject references easier in dictionary as opposed to divided catalogs. (1 study, or 100%, does not support).

Not Supporting: Krikelas (1969, p. 410 in Aubrey).

c. Library users perform subject searches more frequently in divided catalogs than in dictionary catalogs. (1 study, or 100%, supports).

Supporting: Penalosa (1949, p. 89 in Montague).

3. The Catalog's Controlled Vocabulary

a. Familiarity with cataloging practices and rules results in improved matching with the catalog's controlled vocabulary for subject searches. (1 study, or 100%, supports).

Supporting: Bates (1977, p. 164).

b. Successful matching of user search terms to the catalog's controlled vocabulary terms may be related to catalog size, i.e., as the highest percentage of matching occurs in larger catalogs. (1 study, or 100%, supports).

Supporting: Coblenz and Tagliacozzo (1970, IV/122) and Tagliacozzo (1970, p. 249).

c. Subject searchers do not make use of passes (1) in order to generate additional search terms in 50% of their searches. (1 study, or 100%, supports).

Supporting: Tagliacozzo and Semmel (1970c, IV/104-107).

(1) Pass is defined as the act of exploiting either alphabetical proximity to a matched entry of conceptually related entries or the cross-references which link them to arrive at further search terms. Excludes form subheadings, e.g., --Congresses, --Bibliographies, etc.

d. Over 50% of catalog users consult a single subject heading. (4 studies, or 100%, support).

Supporting: Petrof [1962, p. 39 in Palmer (1972)]; Knapp [1943, p. 33 in Palmer (1972)]; Tagliacozzo and Semmel (1970c, IV/103) (1); Jackson (1958, p. 65).

(1) In four of four libraries surveyed: (a) University of Michigan, General Library; (b) University of Michigan, Undergraduate Library; (c) University of Michigan, Medical Library; (d) Ann Arbor Public Library.

e. Over 50% of subject searchers' initial search terms are exact matches with the catalog's controlled vocabulary. (1 study, or 33% supports; 2 studies do not support).

Supporting: Coblenz and Tagliacozzo (1970, IV/119).

Not Supporting: Vaughan (1968a, p. 22) (1); Day (1968, p. 59).

(1) In memorability experiment. Here users did not generate their own queries, thus their own expectations and motivation to memorize initially may have been low when first encountering the item.

f. If catalog users select a search term which is not a controlled vocabulary term, the term chosen is likely to be broader than the accepted term. (2 studies, or 67%, support; 1 study does not support).

Supporting: Knapp [1943, p. 34 in Palmer (1972)]; Bates (1977a, p. 372) (1).

Not Supporting: Tagliacozzo (1972, p. 279) (2).

(1) When asked what search terms they would consult to find books on a given topic, nonlibrary students responded with terms that were too broad to index the book.

(2) No associations (in 50% of the cases) linking the search term to the query could always be reconstructed.

g. When conjuring up subject headings for a book, subject specialists are more likely than nonspecialists to match the controlled vocabulary assigned to the item. (2 studies, or 100%, do not support).

Not Supporting: Bates (1977, p. 165); Bates (1977a, p. 372).

h. When conjuring up subject headings for a particular book, more than 70% of users' responses are correct or partially correct (1). (3 studies, or 60%, support; 2 studies do not support).

Supporting: Coblenz and Tagliacozzo (1970, IV/119) (2); Vaughan (1968a, p. 22); Day (1968, p. 58).

Not Supporting: Bates (1977a, p. 372); Malcolm (1950, p. 26 in Montague).

(1) Partially correct is defined as the card can be located through cross references.

(2) In four of four libraries surveyed: (a) University of Michigan, General Library; (b) University of Michigan, Undergraduate Library; (c) University of Michigan, Medical Library; (d) Ann Arbor Public Library.

i. Items selected by subject searchers at the card catalog will have a significantly greater number of subject headings than those not selected. (1 study, or 100%, supports).

Supporting: Highfill (1969, p. 134).

j. Items chosen in subject searches at the card catalog show a significant difference from nonselected items in degree of match between title words and subject heading words on the catalog card, date of publication (i.e., more recent), and position of entry in the card catalog. (1 study, or 100%, supports).

Supporting: Highfill (1969, p. 219).

4. Known-item Searches

a. Library staff members perform more known-item searches than public catalog searchers. (4 studies, or 80%, support; 1 study does not support).

Supporting: McGeever (1958, p. 45 in Montague); Brooks and Kilgour (1964, p. 486); Jackson (1958, p. 10; Palmer (1970, p. 105).

Not Supporting: Palmer (1970, p. 105) (1).

(1) Only faculty members at the University of Michigan's General Library card catalog performed more known-item searches than the University of Michigan's library staff.

b. Library users at academic institutions perform more known-item than subject searches. (15 studies, or 75%, support; 5 studies do not support).

Supporting: Amos (1955, p. 96 in Montague; Palmer (1970, p. 103); Brown (1949, p. 13 in Montague); Riddle (1952, p. 96 in Montague); Maltby and Sweeney (1972a, p. 194); Jackson (1958, p. 10) (1); Rothrock (1954, p. 35 in Montague); Penalosa (1949, p. 96 in Montague); Miller [1942, p. 21 in Palmer (1972)]; Markley [1950, p. 45 in Palmer (1970)]; Thurlow [1951, p. 37 in Palmer (1972)]; Tagliacozzo (1970a, IV/29); Blackburn (1968, p. 64); Weiss (1978, p. 112); Lipetz (1972, p. 135).

Not Supporting: Lee (1952, p. 19 in Montague); Petrof [1962, p. 38 in Palmer (1972)]; Sacco (1973, p. 261); Jackson (1958, p. 10) (2); Merritt [1951, p. 36 in Palmer (1972)].

(1) In three academic institutions categorized by size of catalog: (a) 1.5 to 5 million cards; (b) 0.9 to 1.2 million cards; (c) 0.45 to 0.6 million cards.

(2) In one academic institution categorized by size of catalog: (a) 0.15 to 0.16 million cards.

c. Library users at a public library perform more subject searches than known-item searches. (4 studies, or 57%, support; 3 studies do not support).

Supporting: Irwin (1949, p. 39 in Montague); Simmons (1974, p. 331); Sacco (1973, p. 261); Jackson (1958, p. 10).

Not Supporting: Penalosa (1949, p. 96 in Montague); Tagliacozzo (1970a, IV/29); Maltby and Sweeney (1972a, p. 194).

d. Library users at special libraries (1) perform more known-item than subject searches. (6 studies, or 86%, support; 1 study does not support).

Supporting: Jackson (1958, p. 10); McGeever (1958, p. 45 in Montague); Wolfert (1959, p. 59 in Montague); Brooks and Kilgour (1964, p. 486); Tagliacozzo (1970a, IV/29); Diener (1970, p. 119) (2).

Not Supporting: Diener (1970, p. 119) (3).

(1) Special libraries include those affiliated with an academic institution but supporting a distinct area, e.g., Yale Medical Library or Boston University School of Theology Library.

(2) In three of four theological libraries surveyed: (a) Andover Newton Theological School Library; (b) Episcopal Theological School/Weston College Library; (c) Harvard Divinity School Library.

(3) In one of four theological libraries surveyed: (d) Boston University School of Theology Library.

e. Card catalog users are likely to perform more known-item than subject searches at the card catalog as they increase their years of formal schooling. (8 studies, or 67%, support; 4 studies do not support).

Supporting: Rothrock (1954, p. 35 in Montague); McGeever (1958, p. 47 in Montague); Penalosa (1949, pp. 89, 104 in Montague); Miller [1942, p. 22 in Palmer (1972)]; Tagliacozzo (1970a, IV/32-33); Diener (1970, p. 119) (1); Jackson (1958, p. 10); Palmer (1970, p. 104).

Not Supporting: Brown (1949, p. 13 in Montague); Riddle (1952, p. 29 in Montague); Kerr [1943, p. 23 in Palmer (1972)]; Lipetz (1970a, p. 38 in Lancaster).

(1) Implied in the findings from theological libraries serving graduates where the known-item approach predominates, in contrast to one library serving primarily undergraduates where the subject approach prevails.

f. Students seeking information in their area of specialty are likely to perform more known-item than subject searches at the catalog. (1 study, or 50%, supports; 1 study does not support).

Supporting: Rothrock (1954, p. 35 in Montague).

Not Supporting: Wolfert (1959, p. 59 in Montague).

g. Advanced researchers, in comparison to the general public, are more likely to perform known-item than subject searches. (1 study, or 100%, supports).

Supporting: Spalding (1950, p. 68 in Montague).

h. Users of a special library who consult the catalog for a search in connection with their job are more likely to perform known-item searches. (1 study, or 100%, supports).

Supporting: McGeever (1958, p. 47 in Montague).

i. Catalog users searching for known-items employ all three approaches: author, title, and subject. (5 studies, or 83%, support; 1 study does not support).

Supporting: Tagliacozzo (1970, p. 243); Diener (1970, p. 120) (1); Simmons (1974, p. 332); Sacco (1973, p. 262) (3); Jackson (1958, p. 12).

Not Supporting: Diener (1970, p. 120) (2).

(1) In three of four theological libraries surveyed: (a) Andover Newton Theological School Library; (b) Episcopal Theological School/Weston College Library; (c) Harvard Divinity School.

(2) In one of four theological libraries surveyed: (d) Boston University School of Theology Library.

(3) In two of two libraries surveyed: (a) Forest Park Community College, St. Louis; (b) District Center Library, West Chester, PA.

j. In a known-item search, the author rather than the title or subject approach is preferred by users. (8 studies, or 80%, support; 2 studies do not support).

Supporting: Maltby and Sweeney (1972a, p.194); Jackson (1958, p. 12); Lipetz (1972, p. 136); Brown (1949, p. 101 in Montague); Irwin (1949, p. 101 in Montague); Tagliacozzo (1970, p. 243); Diener (1970, p. 120) (2); Kelley (1966, p. 200).

Not Supporting: Diener (1970, p. 120) (c); Weiss (1978, p. 112) (1).

(1) Data collected from reference inquiries related to catalog use.

(2) In three of four theological libraries surveyed: (a) Andover Newton Theological School Library; (b) Episcopal Theology School/Weston College Library; (c) Harvard Divinity School Library.

(3) In one of four theological libraries surveyed: (d) Boston University School of Theology Library.

k. Users who only have title information for a particular known item employ all three approaches to the card catalog: author, title, or subject. (2 studies, or 100%, support).

Supporting: Brown (1949, p. 14 in Montague); Irwin (1949, p. 41 in Montague).

l. If users are unsuccessful on their first look-up when performing a known-item search, they use author, title, or subject approaches on subsequent trials. (1 study, or 100%, supports).

Supporting: Tagliacozzo (1970, p. 243).

C. Generalizations Specific To Known-item Searches

1. Nonstandard Information

a. Card catalog searchers performing known-item searches remember nonstandard bibliographic information. (4 studies, or 100%, support).

Supporting: Blackburn (1968, pp. 21-25); Schmierer (1968, p. 44); Vaughan (1968a, p. 16) (1); Cooper (1970, p. 124) (1).

(1) In laboratory experiments rather than field studies at the catalog.

2. Failure at the Catalog

a. More than 20% of known-item searches are successful. (5 studies, or 50%, support; 5 studies do not support).

Supporting: Amos (1955, p. 115 in Montague) (1); Lipetz (1972, p. 135) (3); Tagliacozzo (1970, p. 232) (4); Jackson (1958, p. 15) (3) Palmer (1970, pp. 114, 118) (3).

Not Supporting: Riddle (1952, p. 115 in Montague) (2); Tagliacozzo (1970, p. 232) (5); Blackburn (1968, p. 48) (6) Sacco (1973, p. 263) (2); Simmons (1974, p. 332) (2).

(1) Success defined as not in the catalog, wrong entry consulted, entry misunderstood or misspelled.

(2) No definition of success is given.

(3) Success defined as the document is in catalog and located by user.

(4) Success defined as when a catalog card containing the reference for the item is found; in three of four libraries surveyed: (a) University of Michigan, General Library; (b) University of Michigan, Undergraduate Library; (c) Ann Arbor Public Library.

(5) Success defined as when a catalog card containing the reference for the item is found in one of four libraries surveyed: (d) University of Michigan, Medical Library.

(6) Success defined as what the user found without aid from a librarian or researcher.

b. The proportion of user failures, in contrast to collection failures, increases as the size of catalog increases. (4 studies, or 80% support; 1 study does not support).

Supporting: Tagliacozzo (1970, p. 233) (1); Aubrey (1972, p. 406); Jackson (1958, pp. 15, 19); Vaughan (1968, pp. 50, 54) (2).

Not Supporting: Tagliacozzo (1970, p. 233) (3).

(1) In three of four libraries surveyed: (a) University of Michigan, General Library; (b) University of Michigan, Undergraduate Library; (c) Ann Arbor Public Library.

(2) Subjects' responses to bibliographic information of previously seen items shows that when searching the catalog based on the bibliographic information they recall, the rate of success over all approaches, i.e., title, author, or subject, declines as the number of cards manipulated increases.

(3) In one of four libraries surveyed: (d) University of Michigan, Medical Library.

c. Less than 50% of known-item searchers continue their search after failing to find a single reference at their initial attempt. (1 study, or 100%, supports).

Supporting: Tagliacozzo and Semmel (1970c, p.109) (1).

(1) At four of four libraries surveyed: (a) University of Michigan, General Library; (b) University of Michigan, Undergraduate Library; (c) Ann Arbor Public Library; (d) University of Michigan, Medical Library.

d. Known-item searches are more likely to fail when the searcher has obtained the reference from a citation in a text. (1 study, or 100%, supports).

Supporting: Blackburn (1968, p. 56).

3. Author-title Information

a. A greater percentage of written than memorized titles is correct and complete. (1 study, or 100%, supports).

Supporting: Tagliacozzo (1970, p. 240).

b. A greater percentage of written than memorized author names is correct and complete. (1 study, or 100%, supports).

Supporting: Tagliacozzo (1970, p. 241).

c. Users bring to the catalog title information more likely to be complete and accurate than author information. (4 studies, or 80%, support; 1 study does not support).

Supporting: Lipetz (1970a, p. 38 in Lancaster); Tagliacozzo (1970, p. 240); Vaughan (1968, p. 52); Ayres (1968, p. 268).

Not Supporting: Blackburn (1968, p. 26).

d. The probability of a name having a spelling error increases with the length of name. (1 study, or 100%, supports).

Supporting: Tagliacozzo, Kochen, and Rosenberg (1970e, p. 93).

e. The user's information about the author is a better predictor of success than his information about the title. (2 studies, or 67%, support; 1 study does not support).

Supporting: Tagliacozzo (1970, p. 248); Vaughan (1968, p. 54).

Not Supporting: Lipetz (1972, p. 136).

f. Users who have both author and title information for a known-item are more likely to employ an author approach. (2 studies, or 100%, support).

Supporting: Brown (1949, p. 14 in Montague); Tagliacozzo (1970, p. 244).

III. TABLE OF CATALOG USE STUDIES CITED IN LITERATURE REVIEWS

A. Introduction To The Table

Catalog use studies have been included in a number of literature reviews and annotated bibliographies. Montague (1967), Palmer (1970), Aubrey (1972), Davis and Bailey (1964), and Palmer (1972) have summarized individual selected studies in rather lengthy annotations containing information on their scopes, purposes, methodologies and findings. Swanson (1972) covers only investigations connected with the Future Catalogs project at the University of Chicago in a similar annotated bibliography. Hafter (1979) summarizes the findings of catalog use studies with respect to the proportion of known-item and subject searches according to institution and educational level of the searcher.

Frarey (1953), Krikelas (1972), and Lancaster (1977) offer bibliographic essays on catalog use studies. Lancaster's review contains little evaluation, but concludes with a compilation of the major findings of the five most substantive use studies. (See footnote 2). The compilation should be compared with Chapter II of this report. Atherton (1978), enhancing Lancaster's review, points out that the major findings about catalog use remain unheeded and suggests what future catalogs might entail based upon the implications of catalog use study findings.

Table 3 lists those catalog use studies that have been covered in the major bibliographic essays or annotated in the major literature reviews on catalog use. The authors of the reviews are listed at the top of the columns. Asterisked items (*) refer to those studies that are treated substantially in the texts of Chapters I and II of this report.

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2. Jackson (1958); Swanson (1972); Tagliacozzo (1970, 1970d); Lipetz (1970a); Maltby (1971, 1973).

Table 3. Catalog Use Studies

Catalog Use Studies	Reviews							
	Frarey (1953)	Montague (1967)	Palmer (1970)	Aubrey (1972)	Krikelas (1972)	Palmer (1972)	Swanson (1972)	Lancaster (1977)
* Akers (1931)	X		X	X	X	X		X
* Amos (1955)		X	X					
* Aubrey (1972)							X	
* Ayres (1968)				X	X			X
* Blackburn (1968)					X		X	X
* Bookstein (1972)							X	
* Bookstein (1968)							X	
Bovey and Mullrick (1963)		X			X			
Brett (1949)	X							
Brett (1951)	X							
* Brooks and Kilgour (1964)		X						X
* Brown, E. (1949)	X	X	X			X		
Brown, E. (1946)	X		X	X	X	X		
Brown, M. (1947)	X							
* Cooper (1970)							X	X
Davis (1964)					X			
* Day (1968)							X	
Dubester (1964)				X				
Elrod (1962)				X				
Field (1956)				X				
* Frarey (1953)			X		X	X		X
Goodrich (1934)	X							
Grathwol (1971)							X	X
Haygood (1938)	X				X			

Note: Asterisked items (*) distinguish those studies that are discussed substantially within this report in Chapters I and II.

An "X" in the columns indicates those studies that have been discussed and/or evaluated in the reviews.

Table 3. Catalog Use Studies (continued)

Catalog Use Studies	Reviews							
	Frarey (1953)	Montague (1967)	Palmer (1970)	Aubrey (1972)	Krikelas (1972)	Palmer (1972)	Swanson (1972)	Lancaster (1977)
Heinritz (1964)				X	X			
Hinkley (1968a)					X		X	X
* Hitchcock (1959)			X			X		
* Irwin (1949)	X	X			X			X
* Jackson (1958)		X	X		X	X		X
Kelley (1937)	X							
* Kenney (1966)								X
* Kerr (1943)	X		X		X	X		
* Knapp (1943)	X		X			X		
Knapp (1944)	X							
* Kochen (1970)					X			
* Krikelas (1969)				X				
* Lee (1952)		X	X			X		
Lilley (1954)				X				
* Lipetz (1970a)				X	X	X		X
* Lipetz (1972)								X
* Lipetz, Stangl and Taylor (1969)					X			
* Lyon (1963)		X						X
* MacLean (1972)								X
* Malcolm (1950)	X	X			X			X
* Maltby (1971)								X
* Maltby (1973)								X
* Maltby and Duxbury (1972)								X
* Maltby and Sweeney (1972a)								X
Marable (1943)	X							

Table 3. Catalog Use Studies (continued)

Catalog Use Studies	Reviews							
	Frarey (1953)	Montague (1967)	Palmer (1970)	Aubrey (1972)	Krikelas (1972)	Palmer (1972)	Swanson (1972)	Lancaster (1977)
* Markley (1950)	X		X	X	X	X		
* McGeever (1953)		X						
* Merritt (1951)	X		X		X	X		
* Miller (1942)	X		X	X	X	X		
* Montague (1967)		X	X		X		X	X
Morris (1965)					X			
Morris (1971)								X
Munson (1946)	X				X			
Munson (1947)				X				
* Palmer (1970)			X		X			
* Palmer (1972)						X		X
* Penalosa (1949)	X	X	X	X		X		
* Perrine (1967)								X
* Perrine (1968)					X			X
* Petrof (1962)			X			X		
Quigley (1944)	X							X
Randall (1930)			X		X			
* Riddle (1952)		X	X			X		X
Rogers (1951)	X							
* Rothrock (1954)		X			X			X
Rue (1946)	X							
Rue (1949)	X							
Schloeder (1945)	X							
* Schmierer (1968)							X	

Table 3. Catalog Use Studies (continued)

Catalog Use Studies	Reviews							
	Frarey (1953)	Montague (1967)	Palmer (1970)	Aubrey (1972)	Krikelas (1972)	Palmer (1972)	Swanson (1972)	Lancaster (1977)
* Seymour and Schofield (1973)								X
Simonton (1948)	X							
Simonton (1950)	X							
* Spalding (1950)	X	X	X	X		X		X
Stevens (1950)					X			
Swank (1944)	X							
Swank (1945)	X							
* Swanson (1972)								X
* Tagliacozzo and others (1970)				X	X			X
* Tagliacozzo and others (1970d)					X			X
* Tagliacozzo and others (1970e)				X	X			
* Thurlow (1951)	X		X		X	X		
University of Michigan. Survey Center. (1948)	X				X			
* Vaughan (1968)							X	
* Vaughan (1968a)							X	
Vaughan (1972)							X	X
* Williams (1952)		X	X		X	X		
* Wolfert (1959)		X						X

IV. BIBLIOGRAPHY OF CATALOG USE STUDIES

*Akers, Susan. To what extent do the students of the liberal-arts colleges use the bibliographic items given on the catalog card? Library Quarterly. 1: 394-408; 1931 October.

*Amos, Geraldine Odester. The extent to which students of Dillard University use the card catalog. Atlants, GA: Atlanta University, School of Library Science; 1955. M.A. thesis.

*Artandi, Susan. The searchers--link between inquirers and indexes. Special Libraries. 57: 571-574; 1966.

*Atherton, Pauline. BOOKS are for use: Final report of the subject access project to the Council on Library Resources. Syracuse, NY: Syracuse University, School of Information Studies; 1978. 172p.

*Atherton, Pauline. Catalog users' access from the researcher's viewpoint: Past and present; findings about subject searches. 1978a November; New Orleans, LA. Chicago, IL: American Library Association, LITA; (in publication).

*Aubrey, John. A timing study of the manual searching of catalogs. Library Quarterly. 42(4): 399-415; 1972.

*Ayres, F.H. (and others). Author versus title: a comparative survey of the information which the user brings to the library catalog. Journal of Documentation. 24(4): 266-272; 1968 December.

*Back, Harry Bernard. The design and evaluation of an interactive reference retrieval system for the management sciences. Pittsburgh, PA: Carnegie-Mellon University, Graduate School of Industrial Administration; 1976. 2v. Ph.D. dissertation.

*Bates, Marcia. Factors affecting subject catalog search success. Journal of the American Society for Information Science. 28: 161-169; 1977 May.

*Bates, Marcia. System meets user: problems in matching subject search terms. Information Processing and Management. 13: 367-375; 1977a.

*Bates, Marcia. Information Search Tactics. Journal of the American Society for Information Science. 30(4): 205-214; 1979 July.

*Bates, Marcia. Summary of information search tactics and definitions. In: Atherton, Pauline. Online searching of ERIC. Syracuse, NY: ERIC/Information Resources; 1979a: IV/24-30.

Asterisked items (*) refer to those studies that are treated substantially in the texts of Chapter I and II of this report.

*Bierman, Kenneth John. Automated alternatives to card catalogs; the current state of planning and implementation. Journal of Library Automation. 8 (4): 277-298; 1975 December.

*Blackburn, Mary. The information known by users of the catalog who are looking for a particular work. Chicago: University of Chicago, Graduate Library School; 1968. 74p. M.A. thesis.

*Bookstein, Abraham. Congestion at card and book catalogs--a queuing theory approach. Library Quarterly. 42 (3): 316-328: 1972.

*Bookstein, Abraham. A hybrid access method for bibliographic records. Journal of Library Automation. 7 (2): 97-104; 1974 June.

Bovey, Robert L.; Mullick, Satinder Kumar. A study of library usage. In: Progress report on an operations research and systems engineering study of a university library. Baltimore, MD: The Johns Hopkins University; 1963: 53-108.

Brett, William H., III. Use of the subject catalog by the general reference service of the University of California library. University of California; 1949. M.L.S. essay.

Brett, William H., III. Use of the subject catalog by the general reference service of a university library. Journal of Cataloging and classification. 7: 16-19; 1951 Winter.

*Brittain, John Michael. Information and its users. New York: Wiley-Interscience; 1970. 208p.

*Brooks, Benedict; Kilgour, Frederick G. Catalog subject searches in the Yale Medical Library. College and Research Libraries. 25: 483-487; 1964 November.

*Brown, Emily Klueter. The use of the catalog in a university library. Chicago: University of Chicago, Graduate Library School; 1949. M.A. thesis.

Brown, Margaret C. Use made of the subject catalog by graduate students in the social sciences. Chicago: University of Chicago, Graduate Library School; 1946. M.A. thesis.

Brown, Margaret C. The graduate student's use of the subject catalog. College and Research Libraries. 8: 203-208; 1947 July.

*Bryant, Philip; Needham, Angela. You need long nails. Catalog and Index. No. 33: 1, 11-12; 1974 Spring.

*Bryant, Philip. The Bath University comparative catalog study. Catalog and Index. No. 41: 6-8; 1976 Summer.

*Chervenie, Paul. Library catalogs in American academic libraries. Drexel Library Quarterly. 7: 56-64; 1971 January.

*Coblenz, Kathie; Tagliacozzo, Renata. Matching query terms to catalog subject headings. In: Kochen, Manfred. Integrative mechanisms in literature growth: final report. Ann Arbor, MI: University of Michigan, Mental Health Research Institute; 1970 January: IV/111-126.

The Committee for the Coordination of National Bibliographic Control. The subject access problem--opportunities for solution. Highlights of a Workshop; 1978 October 18-20; Springfield, VA. 46p.

*Cooper, William S. The potential usefulness of catalog access points other than author, title, and subject. Journal of the American Society for Information Science. 21 (2): 112-127; 1970 March-April.

*Crum, N.J. The librarian-customer relationship. Special Libraries. 60: 269-277; 1969.

Davis, R.A.; Bailey, C.A. Bibliography of use studies. Philadelphia Pa.: Drexel Institute of Technology, Graduate School of Library Science; 1964 March. Drexel Library School Series no. 18 98 1.

*Day, Dorothy A. Accuracy and utility of subject-related responses. In: Requirements study for future catalogs, progress report no. 2 (microfiche). Chicago: University of Chicago; 1968 March: 55-63. ED022508.

*Dervin, Brenda. The everyday information needs of the average citizen: a taxonomy for analysis. In: Kochen, Manfred; Donahue, Joseph C., eds. Information for the community. Chicago: American Library Association; 1976: 19-38.

*Diener, Ronald E. Catalog use study. Religious and Theological Resources. 1 (4): 115-122; 1970 April.

*Doyle, Lauren B. Information retrieval and processing. Los Angeles: Melville; 1975. 410p.

Dubester, Henry J. Studies related to catalog problems. Library Quarterly. 34: 97-105; 1964 January.

Elrod, J. McRee. The divided catalog. Library Journal. 87: 1728-1730; 1962 May.

Field, Oliver T. An experiment in catalog reform. College and Research Libraries. 17: 414-419; 1956 September.

*Foskett, F.A. The subject approach to information. 3rd ed. Hamden, CT: Linnet Books; 1977. 476p.

*Francillon, M. Information retrieval: a view from the reference desk. Journal of Documentation. 15: 187-198; 1959.

*Frarey, Carlyle J. Studies of use of the subject catalog: summary and evaluation. In: Tauber, Maurice F., ed. The subject analysis of library materials. New York: Columbia University, School of Library Service; 1953: 147-166.

*Frarey, Carlyle J. Subject headings and the subject catalog. In: Shaw, Ralph R. The state of the library art. New Brunswick, N.J.: Rutgers, Graduate School of Library Science; 1960: 5-92.

Goodrich, Nathaniel L. Top Soil. Dartmouth College Library Bulletin. 1: 3-4; 1934 May 1.

Grathwol, Mary. Bibliographic elements and citations in catalog entries: a comparison. Chicago: University of Chicago, Graduate Library School; 1971. 85 1. M.A. thesis.

*Hafter, Ruth. Type of search by type of library. Information Processing and Management. 15:261-264; 1979.

Haygood, William C. Use of the catalog. In: Haygood, William C. Who uses the public library? Chicago: University of Chicago Press; 1938: 70-78.

*Hays, Timothy; Shearer, Kenneth D.; Wilson, Concepcion. The patron is not the public. Library Journal. 102 (16): 1813-1818; 1977 September 15.

Heinritz, F. Does dividing the catalog relieve congestion? Library Resources and Technical Services. 8: 310-316; 1964.

*Highfill, William Carl. The relationship of indexing depth to subject catalog retrieval effectiveness. Urbana, IL.: University of Illinois; Department of Library Science; 1969. 275 1. Ph.D. dissertation.

*Hinkley, William A. An analysis of non-exact title data. In: Requirements study for future catalogs, progress report no. 2 (microfiche). Chicago: University of Chicago; 1968 March: 64-72. ED022508.

Hinkley, William A. On searching catalogs and indexes with inexact title information. Chicago: University of Chicago, Graduate Library School; 1968a. M.A. thesis.

*Hitchcock, Jennette E. Objective subjectivity: four-year report on starred subject cards. College and Research Libraries. 20: 9-14; 1959 January.

*Hudson, Judith A. Searching MARC/DPS records for area studies: comparative results using keywords, LC and DC class numbers. Library Resources and Technical Services. 14(4): 530-545; 1970 Fall.

*Irwin, Robert R. Use of the card catalog in the public library. Chicago: University of Chicago, Graduate Library School; 1949. 87 1. M.A. thesis.

*Jackson, Sidney L. Catalog use study. Chicago: American Library Association, Resources and Technical Services Division; 1958. 86p.

*Jahoda, Gerald. The reference process; modules for instruction. Tallahasee, FL. Florida State University School of Library Science; 1976.

*Katz, William A. Introduction to reference work. 2nd ed. New York: McGraw-Hill; 1974. 2v.

Kelley, Grace O. The classification of books: an inquiry into its usefulness to the reader. New York: Wilson; 1937. 200p.

*Kenney, Laraine. The implications of the needs of users for the design of a catalogue: a survey at the International Labour Office. Journal of Documentation. 22: 195-202; 1966.

*Kerr, Willis H. The professor looks at the card catalog. College and Research Libraries. 4: 134-141; 1943 March.

*Knapp, Patricia B. The subject catalog in the college library: an investigation of terminology. Chicago: University of Chicago, Graduate Library School; 1943. 90 l. M.A. thesis.

Knapp, Patricia B. The subject catalog in the college library. Library Quarterly. 14: 108-118, 214-228; 1944 April and July.

*Kochen, Manfred. Integrative mechanisms in literature growth: final report. Ann Arbor, MI. University of Michigan, Mental Health Research Institute; 1970 January. 2v.

*Krikelas, James. Subject searches using two catalogs: a comparative evaluation. College and Research Libraries. 30: 506-517; 1969 November.

*Krikelas, James. Catalog use studies and their implications. Advances in Librarianship. 5: 195-202; 1972.

*Krikelas, James. Book review: The Library Association, Cataloguing and Indexing Group. U.K. Catalogue Survey, a report by A. Maltby, London, 1973. Newsletter on Library Research. 9: 7-10: 1974.

Lancaster, F.W. Information retrieval systems: characteristics, testing, and evaluation. New York: Wiley; 1968. 222p.

*Lancaster, F.W. The measurement and evaluation of library services. Washington, D.C.: Information Resources Press; 1977. 395p.

*Lee, Elizabeth Cora. Use of the card catalog by Spelman students in the Spelman and Trevor Arnett libraries. Atlanta, GA: Atlanta University, School of Library Science; 1952. M.A. thesis.

Lilley, Oliver L. Evaluation of the subject catalog: criticism and a proposal. American Documentation. 5: 41-60; 1954 April.

*Lipetz, Ben-Ami. User cues in initiating searches in a large library catalog. Proceedings of the 5th Annual Meeting of the American Society for Information Science; 1968 October 20-24; Columbus, Ohio. New York: Greenwood Publishing; 1968: 137-139. (Proceedings of the Annual Meeting, ASIS: v.5).

*Lipetz, Ben-Ami. A quantitative study of catalog use. Carroll, Dewey E., ed. Proceedings of the 1969 Clinic on Library Applications of Data processing; 1969 April 27-30. Urbana, IL: University of Illinois, Graduate School of Library Science; 1970: 42-49.

*Lipetz, Ben-Ami. User requirements in identifying desired works in a large library (microfiche). New Haven, CT: Yale University, Library; 1970a. 121p. ED042479.

*Lipetz, Ben-Ami. Catalog use in a large research library. Library Quarterly. 41 (1): 129-139; 1972.

*Lipetz, Ben-Ami. The library catalog: evaluations and use studies. In: Lancaster, F.W.; Cleverton, C.W., eds. Evaluation and Scientific Management of Libraries and Information Centers; 1975; Bristol, U.K. Leyden: Noordhoff; 1977: 13-26.

*Lipetz, Ben-Ami.; Stangl, Peter; Taylor, Kathryn F. Performance of Reucking's word-compression method when applied to machine retrieval from a library catalog. Journal of Library Automation. 2 (4): 266-271; 1969 December.

*Lynch, Mary Josephine. Reference interviews in public libraries. New Brunswick, N.J.: Rutgers, Graduate School of Library Services; 1977. Ph.D. dissertation.

*Lynch, Mary Josephine. Reference interviews in public libraries. Library Quarterly. 48 (2): 119-142; 1978 April.

*Lyon, Shirley Ann. Assistance for users of the catalog in a university library. Chicago: University of Chicago, Graduate Library School; 1963. M.A. thesis.

*MacLean, Hillas. Using the library catalog. New Zealand Libraries. 36: 165-172; 1972.

*Madden, Michael. Lifestyles of library users and non-users. Urbana, IL: University of Illinois, Graduate School of Library Science; 1977 February. Occasional papers, no. 137.

*Malcolm, R.S. The student's approach to the card catalog. Pittsburgh, PA: Carnegie Institute of Technology; 1950. M.S. thesis.

*Maltby, Arthur. Measuring catalog utility. Journal of Librarianship. 3 (3): 180-189; 1971 July.

*Maltby, Arthur. U.K. Catalogue use survey: a report. London: The Library Association; 1973. 35p.

*Maltby, Arthur; Duxbury, A. Description and annotation in catalogues: an attempt to discover readers' attitudes and requirements. New Library World. 73: 260-262, 273; 1972 April.

*Maltby, Arthur; Sweeney, Russell. The U.K. catalogue user survey. Journal of Librarianship. 4 (3): 188-204; 1972a July.

Marable, Mary H. Reader reaction to subject headings in the card catalog: a statistical study. Urbana, IL: University of Illinois; 1943. M.S. essay.

*Markley, Anne E. University of California subject catalog inquiry; a study of the subject catalog based on interviews with users. Journal of Cataloging and Classification. 6: 88-95; 1950 Fall.

*McFayden, Don. The psychology of inquiry. Journal of Librarianship. 7: 3-11; 1975.

*McGeever, Emmett Bernard. A study in the use of a classified catalog. Chicago: University of Chicago, Graduate Library School; 1953. M.A. dissertation.

*Merritt, Le Roy Charles. The use of the subject catalog in the University of California library. University of California Publications in Librarianship. 1 (1): 1-18; 1951.

*Miller, Robert A. On the use of the card catalog. Library Quarterly. 12: 629-637; 1942 July.

*Miller, Robert B. The psychology of the information retrieval users. Poughkeepsie, NY: IBM, Development Laboratory, Data Systems Division; 1963 January. TR 00.966. 25p.

*Montague, Eleanor Ann. Card catalog use studies, 1949-1965. Chicago: University of Chicago, Graduate Library School; 1967. 120p. M.A. thesis.

*Morris, Jacquelyn; Elkins, Elizabeth A. Library searching: resources and strategies with examples from the Environmental Sciences. New York: Jeffrey Norton; 1978. 129p. Workbook attached.

Morris, M.E. Study of the use of the card catalog at Western Carolina College Library. Chapel Hill, N.C.: University of North Carolina; 1965. M.S. thesis.

Morris, W.E.M. Catalogue computerization project: final report to OSTI, 1967-1971. Part 2. Catalogue use survey. Newcastle upon Tyne: University of Newcastle upon Tyne; 1971. 2v.

*Mount, Ellis. Communication services and the reference question. Special Libraries. 57: 575-578; 1966.

Munson, Frances. The use of the depository catalog in a university library. New York: Columbia, School of Library Service; 1946. M.S. thesis

Munson, Frances L. The use of the depository catalog in a university library. College and Research Libraries. 8: 151-156; 1947 April.

*O'Connor, Daniel O. The interactive influences of person and situation characteristics on expectations and their cumulative effects on relevance judgments and file preference choices by undergraudates searching alphabetical and classed subject catalogs. Syracuse, NY: Syracuse University; 1978. 306p. Ph.D. dissertation.

*Oddy, R.N. Information retrieval through man-machine dialogue. Journal of Documentation. 33 (1): 1-14; 1977 March.

*Paisley, William J. Information needs and uses. In: Cuadra, Carlos, ed. Annual Review of Information Science and Technology. Chicago: Encyclopedia Britannica; 1968: 1-30. (Cuadra, Carlos, ed. ARIST: v.3).

*Palmer, Richard Phillips. User requirements of a university library card catalog. Ann Arbor, MI.: University of Michigan, Library Science; 1970. 311p. Ph.D. dissertation.

*Palmer, Richard Phillips. Computerizing the card catalog in the university library: a survey of user requirements. Littleton, CO.: Libraries Unlimited, Inc.; 1972. 141p.

*Penalosa, Fernando. An investigation of the manner in which students of the University of Denver use the card catalog. Denver: University of Denver; 1949. M.A. essay.

*Perrine, Richard H. Catalog use study. 6 (4): 115-119; 1967 Summer.

*Perrine, Richard H. Causes and cures: catalog use difficulties. RQ. 7 (4): 169-174; 1968 Summer.

*Petrof, Barbara Jean Gainey. A study of the use made of the subject approach to library materials of the Trevor Arnett Library, Atlanta University. Atlanta, GA: Atlanta University, School of Library Service; 1962. M.A. thesis.

Quigley, Henrietta. Investigation of the possible relationship of interbranch loan to cataloging. Library Quarterly. 14: 333-338; 1944 October.

*Radford, Neil A. Title, subtitle, and table of contents as sources of index words. In: Requirements study for future catalogs, progress report no. 2. Chicago: University of Chicago; 1968 March: 73-80. ED022508.

Randall, William N. The use of library catalogs: a research project. ALA Catalogers' and Classifiers' Yearbook. 2: 24-32; 1930.

Rettig, James. A theoretical model and definition of the reference process. R.Q. winter, 1978.

*Riddle, Margaret Selman. The use of a card catalog in the library of a typical women's college. Texas State College for Women, Department of Library Science; 1952. 93 1. M.S. thesis.

Rogers, Frank B. Report from the Army Medical Library. Bulletin of the Medical Library Association. 39: 290-294; 1951 October.

*Rothrock, Ilse Skipsne. Use made of the University of Texas Library in locating materials in the fields of French, Spanish, and Italian literature. Austin, TX: University of Texas, School of Library Science; 1954. 80 1. M.L.A. thesis.

Rue, M. Eloise. Preferences of elementary school children for subject-heading form. Chicago: University of Chicago, Graduate Library School; 1946. M.A. dissertation.

Rue, M. Eloise. Subject headings for elementary school children. Library Journal. 74: 795-797; 1949 May 15.

*Sacco, Concetta N. Book catalog use study. RQ. 12: 259-266; 1973 Spring.

Schloeder, Elmer M. Selective subject cataloging; a preliminary analysis of a possible means of reducing the bulk of the catalog in the university library. Chicago: University of Chicago, Graduate Library School; 1945. M.A. essay.

*Schmierer, Helen F. Evaluation of variations in response patterns of psychology and non-psychology students for all characteristics. In: Requirements study for future catalogs, progress report no. 2 (microfiche). Chicago: University of Chicago; 1968 March: 42-44. ED022508.

*Scott, A.D. Catalogue use: staff talking. New Library World. 76: 93-94; 1975.

*Seymour, Carol A.; Schofield, J.L. Measuring reader failure at the catalogue. Library Resources and Technical Services. 17 (1): 6-24; 1973 Winter.

*Shera, Jesse H.; Egan, Margaret E. The classified catalog: basic principles and practices. Chicago: American Library Association; 1956. 130p.

*Simmons, Peter. Studies in the use of the card catalog in a public library. Canadian Library Journal. 31 (4): 323-337; 1974 August.

Simonton, Wesley. Duplication of entries in the subject catalog of a university library and subject bibliographies in English literature. New York: Columbia University, School of Library Service; 1948. M.S. essay.

Simonton, Wesley. The duplication of subject entries in the catalog of a university library and bibliographies in English literature. College and Research Libraries. 11: 215-221; 1950 July.

*Spalding, C. Sumner. The use of catalog entries at the Library of Congress. Journal of Cataloging and Classification. 6: 95-100; 1950 Fall.

Stevens, R.E. A summary of the literature on the use made by the research worker of the university library catalog. Urbana, IL: University of Illinois, Library School; 1950. Occasional Paper no. 13.

Swank, Raynard C. The organization of library materials for research in English literature. Chicago: University of Chicago, Graduate Library School; 1944. 253 l. Ph.D. dissertation.

Swank, Raynard C. The organization of library materials for research in English literature. Library Quarterly. 15: 49-74; 1945 January.

*Swanson, Don R. Dialogues with a catalog. Library Quarterly. 33: 113-123; 1963.

*Swanson, Don R. Requirements study for future library catalogs. Library Quarterly. 42 (3): 302-315; 1972.

*Tagliacozzo, Renata; Rosenberg, Lawrence; Kochen, Manfred. Access and recognition: from users' data to catalogue entries. Journal of Documentation. 26 (3): 230-249; 1970 September.

*Tagliacozzo, Renata. Types of catalog searches and their relationship to some characteristics of the users. In: Kochen, Manfred. Integrative mechanisms in literature growth: final report. Ann Arbor, MI: University of Michigan, Mental Health Research Institute; 1970a January: IV/27-39.

*Tagliacozzo, Renata; The catalog users of three university libraries and one public library. In: Kochen, Manfred. Integrative mechanisms in literature growth: final report. Ann Arbor, MI: University of Michigan, Mental Health Research Institute; 1970b January: IV/9-26.

*Tagliacozzo, Renata; Semmel, Dorothy. The generation of query terms in subject searches. In: Kochen, Manfred. Integrative mechanisms in literature growth: final report. Ann Arbor, MI: University of Michigan, Mental Health Research Institute; 1970c January: IV/97-109.

*Tagliacozzo, Renata; Kochen, Manfred. Information-seeking behavior of catalog users. Information Storage and Retrieval. 6: 363-381; 1970d.

*Tagliacozzo, Renata; Kochen, Manfred; Rosenberg, Lawrence. Orthographic error patterns of author names in catalog searches. Journal of Library Automation. 3 (2): 93-101; 1970e June.

*Tagliacozzo, Renata; Semmel, Dorothy; Kochen, Manfred. Written representation of topics and the production of query terms. Journal of the American Society for Information Science. 22 (5): 337-347; 1971 September-October.

*Tagliacozzo, Renata. Some relations between queries and search terms generated by catalog users. Journal of the American Society for Information Science. 23 (4): 278-280; 1972 July-August.

*Taylor, Robert S. The process of asking questions. American Documentation. 13: 391-396; 1962.

*Taylor, Robert S. Question-negotiation and information-seeking in libraries. College and Research Libraries. 29: 178-194; 1968.

*Thurlow, Martha. Use of the subject datalogs in the biology and chemistry departmental libraries in a university. New York: Columbia University, School of Library Service; 1951. 51 l. M.S. thesis.

University of Michigan. Survey Research Center. The public library and the people: a national survey done for the public library inquiry. Ann Arbor, MI: University of Michigan; 1948 April. Unpublished document. 95 l.

*Vaughan, Delores K. Effectiveness of book memory data for conventional catalog retrieval. In: Requirements study for future catalogs, progress report no. 2 (microfiche). Chicago: University of Chicago; 1968 March: 45-54. ED022508.

*Vaughan, Delores K. Memorability of book characteristics: an experimental study. In: Requirements study for future catalogs, progress report no. 2 (microfiche). Chicago: University of Chicago; 1968a March: 1-41. ED022508.

Vaughan, Delores K. Titles as sources of subject headings. In: Requirements study for future catalogs: final report. Appendix 1. Chicago: University of Chicago; 1972: 1-10.

*Vavrek, Bernard. Communications and the reference interface. Pittsburgh, PA: University of Pittsburgh, Graduate School of Library and Information Science; 1971. Ph.D. dissertation.

*Weiss, Carole. Card catalog to online catalog--the transitional process. In: Planning for the future of the card catalog. Washington, D.C.: Association of Research Libraries, Systems and Procedures Exchange Center; 1978: 109-121.

*Williams, Jordon Roland. A study of the bibliographic sources used by library patrons. Chicago: University of Chicago, Graduate Library School; 1952. M.A. thesis.

*Wilson, Amy Seetoo; Hsu, Chin Fei. Patron's failures: what can librarians do? 1979 April. Unpublished photocopy.

*Wolfert, Richard Jerome. Use of the card catalog of music scores in a university library. Chicago: University of Chicago, Graduate Library School; 1959. M.A. thesis.

*Yale catalog study yields rich data. Library Journal. 95: 3720; 1970 November 1.

*Zweizig, Douglas. With our eyes on the user: needed research for information and referral in the public library. Drexel Library Quarterly. 12: 48-58; 1976 January-April.

V. CITED AUTHOR INDEX

A list of authors of studies cited in the texts of Chapters I, II, and III follows. The author names are followed by chapter and subsection numbers where they are cited; tables are given where appropriate. References are consistent with and correspond to the numbering system used in the Contents to this report. The contents of Chapters I, II, and III are repeated below, to the first subsection level.

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